

AMENDMENT

Please amend Claims 1-33 as follows:

Claim 1 (currently amended): A data backup and recovery system for computers characterized by provision of comprising:

blocks storing sequentially records containing a single unique key and zero or one or more non-unique keys;

a primary system that controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory and manages a database or databases stored in random access memory; and

a secondary system or systems that is provided with backup blocks corresponding to the blocks of the said primary system in which the source data is stored, controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory, and manages a database or databases stored in random access memory, wherein

said primary system transmits to the secondary system or systems the content of updated data and information, specifying the blocks where updated content, data and pre-updated information is stored,

said secondary system or systems are provided with a synchronous tightly-coupled or an asynchronous loosely-coupled sequencing system arranged to receive transaction initiation information from said primary system and then receive log completion information to said primary system after

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receiving transaction completion information from the primary system until that backup update processing is complete, and

when a transaction is canceled or suffers abnormal termination and the primary system receives a message that the transaction has been canceled, the primary system transmits to the secondary system or systems said message, and the secondary systems restore all affected data back to the state prior to the updates on the basis of the pre-updated information.

Claim 2 (currently amended): ~~The said data backup and recovery system of Claim 1, characterized by:~~

A data backup and recovery system for computers, comprising:

blocks storing sequentially records containing a single unique key and zero or one or more non-unique keys;

a primary system that controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory and manages a database or databases stored in random access memory; and

a secondary system or systems, that is provided with backup blocks corresponding to the blocks of the said primary system in which the source data is stored, controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory, and manages a database or databases stored in random access memory, wherein

~~provision of an said primary system that uses the main memory of the~~

primary processing device that performs application processing as the said random access memory and is provided with a database control mechanism that modifies the content of a database or databases in the said random access memory and a primary backup and recovery control mechanism that transmits data describing those modifications when the said database control mechanism has modified the said database or databases; and

~~provision of an~~ said secondary system or systems, ~~each of which uses~~ use the main memory of the secondary processing device as random access memory and ~~is~~ are provided with a secondary backup and recovery control mechanism that modifies the backup database in the said random access memory with the data transmitted from the said primary backup and recovery control mechanism

said primary system transmits to the secondary system or systems the content of updated data and information specifying the blocks where updated content, data and pre-updated information is stored,

said secondary system or systems are provided with a synchronous tightly-coupled or an asynchronous loosely-coupled sequencing system arranged to receive transaction initiation information from said primary system and then receive log completion information to said primary system after receiving transaction completion information from the primary system until that backup update processing is complete, and

when a transaction is canceled or suffers abnormal termination and the primary system receives a message that the transaction has been canceled, the

primary system transmits to the secondary system or systems said message, and the secondary systems restore all affected data back to the state prior to the updates on the basis of the pre-updated information

Claim 3 (canceled)

Claim 4 (currently amended): ~~The said data backup and recovery system of Claim 1, characterized by:~~ A data backup and recovery system for computers, comprising:

blocks storing sequentially records containing a single unique key and zero or one or more non-unique keys;

a primary system that controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory and manages a database or databases stored in random access memory; and

a secondary system or systems that is provided with backup blocks corresponding to the blocks of the said primary system in which the source data is stored, controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory, and manages a database or databases stored in random access memory, wherein

the said primary system is equipped with primary processing device that performs application processing and a primary storage device made up of random access memory that store stores a database or databases apart from the

main memory of the primary processing device;

the said secondary system or systems are equipped with only a secondary storage device made up of random access memory that ~~store~~ stores a database or databases;

the said primary storage device is provided with means of performing backup data communication, a database control mechanism that modifies the content of the said database or databases, and a primary backup and recovery control mechanism that transmits via the said means of communication data describing those modifications when the said database control mechanism has modified the content of the said database or databases; and

the said secondary storage device is provided with a means of performing backup data communication and a secondary backup and recovery control mechanism that modifies the said backup database or databases with the data transmitted via the said means of communication from the said primary backup and recovery control mechanism;

said primary system transmits to the secondary system or systems the content of updated data and information specifying the blocks where updated content, data and pre-updated information is stored.

said secondary system or systems are provided with a synchronous tightly-coupled or an asynchronous loosely-coupled sequencing system arranged to receive transaction initiation information from said primary system and then receive log completion information to said primary system after receiving transaction completion information from the primary system until that

backup update processing is complete, and

when a transaction is canceled or suffers abnormal termination and the primary system receives a message that the transaction has been canceled, the primary system transmits to the secondary system or systems said message, and the secondary systems restore all affected data back to the state prior to the updates on the basis of the pre-updated information.

Claim 5 (currently amended): ~~The data backup and recovery system of claim 1, characterized by provision of claim 1, characterized by:~~

~~the said primary system transmitting transaction initiation information when transaction processing is initiated and transmitting to the said secondary system updated data and information specifying the block where update content and date are stored;~~

A data backup and recovery system for computers, comprising:

blocks storing sequentially records containing a single unique key and zero or one or more non-unique keys;

a primary system that controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory and manages a database or databases stored in random access memory; and

a secondary system or systems that ~~is~~ are provided with backup blocks corresponding to the blocks of the said primary system in which the source data is stored, controls the location of these blocks by means of a location table pairing

the blocks with physical addresses in random access memory, and manages a database or databases stored in random access memory, wherein

~~the said secondary system or systems updating the relevant data each time it receives information describing updated data on the basis of the information describing the updated data of the relevant transaction; and the said primary system provided with a synchronous tightly-coupled sequencing system arranged to transmit update completion information to the said secondary system or systems when a transaction data update is completed~~

said primary system transmits to the secondary system or systems the content of updated data and information specifying the blocks where updated content, data and pre-updated information is stored,

said secondary system or systems are provided with a synchronous tightly-coupled or an asynchronous loosely-coupled sequencing system arranged to receive transaction initiation information from said primary system and then receive log completion information to said primary system after receiving transaction completion information from the primary system until that backup update processing is complete, and

when a transaction is canceled or suffers abnormal termination and the primary system receives a message that the transaction has been canceled, the primary system transmits to the secondary system or systems said message, and the secondary systems restore all affected data back to the state prior to the updates on the basis of the pre-updated information.

Claim 6 (currently amended): ~~The said data backup and recovery system of claim 1, characterized by: the~~

A data backup and recovery system for computers, comprising:
blocks storing sequentially records containing a single unique key and
zero or one or more non-unique keys;

a primary system that controls the location of these blocks by means of a
location table pairing the blocks with physical addresses in random access
memory and manages a database or databases stored in random access
memory; and

a secondary system or systems that is provided with backup blocks
corresponding to the blocks of the said primary system in which the source data
is stored, controls the location of these blocks by means of a location table pairing
the blocks with physical addresses in random access memory, and manages a
database or databases stored in random access memory, wherein

said primary system transmitting transmits to the secondary system or
systems the content of updated data and information specifying the blocks where
update content and data are stored; and

the said secondary system or systems are provided with a synchronous
tightly-coupled or an asynchronous loosely-coupled sequencing system
arranged to receive transaction initiation information from the said primary
system and then receive log data during the transaction and update the relevant
data, and to not transmit backup completion information to the said primary
system after receiving transaction completion information from the primary

system until that backup update processing has completed, and
when a transaction is canceled or suffers abnormal termination and the
primary system receives a message that the transaction has been canceled, the
primary system transmits to the secondary system or systems said message, and
the secondary systems restore all affected data back to the state prior to the
updates on the basis of the pre-updated information.

Claims 7-9 (Canceled)

Claim 10 (currently amended): ~~The said data backup and recovery~~
~~system of claim 1, characterized by the~~

A data backup and recovery system for computers, comprising:

blocks storing sequentially records containing a single unique key and
zero or one or more non-unique keys;

a primary system that controls the location of these blocks by means of a
location table pairing the blocks with physical addresses in random access
memory and manages a database or databases stored in random access
memory; and

a secondary system or systems that is provided with backup blocks
corresponding to the blocks of the said primary system in which the source data
is stored, controls the location of these blocks by means of a location table pairing
the blocks with physical addresses in random access memory, and manages a
database or databases stored in random access memory, wherein

said primary processing device and secondary processing device are equipped ~~solely~~ with communicating means that performs communications of backup data between them;

~~the~~ said primary storage device is provided with a database control mechanism that modifies the content of the said database or databases and a primary backup and recovery control mechanism that transmits via ~~the~~ said communicating means data describing updates when the said database control mechanism has modified the content of the said database or databases; and

~~the~~ said secondary storage device is provided with a secondary backup and recovery control mechanism that modifies ~~the~~ said backup database or databases with the data transmitted via ~~the~~ said communicating means from ~~the~~ said primary backup and recovery control mechanism.

Claims 11-33 (canceled)

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